

**Louisiana Association of Professional Biologists  
and the  
The Wildlife Society Louisiana Chapter**

***2014 Fall Symposium on  
Recent Natural Resource Research in Louisiana***

***with a Focus Session on  
Louisiana's Feral Hog Invasion***

**August 28<sup>th</sup> and 29<sup>th</sup>**

**Waddill Outdoor Education Center, 4141 North Flannery,  
Baton Rouge, LA 70814**

## LAPB 2014 Fall Symposium: Oral Presentations

Thursday Morning, 28 August 2014

- 8:30-9:20 Coffee and Welcome
- 9:20-9:40 **Predation and recruitment based on orientation of oysters (*Crassostrea virginica*) and mussels (*Ischadium recurvum*) on fabricated shoreline oyster reefs.** *Caleb P. Bourgeois and Earl Melancon.* Department of Biological Sciences, Nicholls State University.
- 9:40-10:00 **Aerial assessment of damage inflicted by wild pigs in marshes of Terrebonne Parish, Louisiana.** *Anthony Ballard<sup>1</sup>, Kim Marie Tolson<sup>1</sup>, James M. LaCour<sup>2</sup>, Edmond Mouton<sup>2</sup>.* <sup>1</sup>Department of Biology, College of Arts, Education, & Sciences, University of Louisiana at Monroe; <sup>2</sup>Louisiana Department of Wildlife and Fisheries.
- 10:00-10:20 **Forested freshwater wetland responses to secondarily treated municipal effluent discharge.** *Ashlee K. Minor and Aaron R. Pierce.* Department of Biological Sciences, Nicholls State University.
- 10:20-10:30 (break)
- 10:30-10:50 **Least Tern (*Sternula antillarum*) nesting success on Grand Isle, Louisiana.** *Heather Fraser<sup>1,2</sup>, Nicole Norelli<sup>1,2</sup>, Erik Johnson<sup>1</sup>, Jed Pitre<sup>2</sup>, Kacy Ray<sup>2</sup>.* <sup>1</sup>Audubon Louisiana, National Audubon Society, <sup>2</sup>American Bird Conservancy.
- 10:50-11:10 **Population dynamics of passerine birds in southern Louisiana.** *Binab Karmacharya<sup>1</sup>, Erik I. Johnson<sup>2</sup>, Jared D. Wolfe<sup>3</sup>, Scott M. Duke-Sylvester<sup>1</sup>.* <sup>1</sup>University of Louisiana at Lafayette; <sup>2</sup>Audubon Louisiana; <sup>3</sup>Louisiana State University.
- 11:10-11:30 **Assessment of the habitat value and edge effect of different wetland restoration techniques for waterbirds in the Mississippi River Bird's Foot Delta.** *Lauren R. Sullivan.* School of Renewable Natural Resources, LSU.
- 11:30-11:50 **Effects of vegetation type on sediment microbial community structure and activity in coastal salt marshes of southeastern Louisiana.** *A.J. Rietl<sup>1</sup>, M.E. Overlander<sup>2</sup>, J.A. Nyman<sup>1</sup>, and C.R. Jackson<sup>2</sup>.* <sup>1</sup>Louisiana State University, School of Renewable Natural Resources. <sup>2</sup>Department of Biology, University of Mississippi.
- 11:50-1:30 (lunch on your own)**

**Thursday Afternoon, 28 August 2014**

- 1:30-1:50 **Diet composition, breeding site-fidelity, and apparent survival of Royal Terns and Sandwich Terns on the Isles Dernieres Barrier Islands Refuge.** *Jeff Liechty and Aaron Pierce.* Department of Biological Sciences, Nicholls State University, Thibodaux, LA.
- 1:50-2:10 **A decadal scale nutrient loading study in a coastal wetland: impacts on soil microbial processes.** *H. Steinmuller, M. Mckee, S. Graham, J.R. White, and I.A. Mendelsohn.* Department of Oceanography and Coastal Sciences, LSU.
- 2:10-2:30 **Toxicology research on a manufactured microbial bio-surfactant for use in oil spill dispersants.** *Bran Wagner, Heidi Oliver, and Christopher C. Green.* School of Renewable Natural Resources and Aquaculture Research Station, Louisiana State University Agricultural Center.
- 2:30-2:50 **Endangered red wolves: historic and contemporary threats.** *Kristin E. Brzeski<sup>1</sup>, Sabrina Taylor<sup>1</sup>, Michael Chamberlain<sup>2</sup>, and David Rabon Jr<sup>3</sup>.*  
<sup>1</sup>School of Renewable Natural Resources, LSU, Baton Rouge, LA; <sup>2</sup>Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA; <sup>3</sup>Red Wolf Recovery Program, U.S.F.W.S., Charolotte, NC
- 2:50-3:00 **(break)**
- 3:00-4:00 **LAPB Fall Business Meeting**
- 4:00-7:00 **Social** (Fried Catfish, Orzo Salad, French Fries, Brownies)

## LAPB 2014 Fall Symposium: Poster Presentations and Focus Session

Friday, 29 August 2013

8:00-9:20 **POSTER SESSION** (with coffee)

**Diurnal microhabitat selection by *Scolopax minor* (American Woodcock) on Sherburne WMA.** *Conner Herrington<sup>1</sup>, Jeffrey Duguay<sup>2</sup> and Kim Marie Tolson<sup>1</sup>.*

<sup>1</sup>Department of Biology, College of Arts, Education, and Sciences, University of Louisiana at Monroe; <sup>2</sup>Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

**Lead shot availability in fields managed for mourning dove harvest.** *James Holt<sup>1</sup>, Kim Marie Tolson<sup>1</sup>, and Jeffrey Duguay<sup>2</sup>.* <sup>1</sup>Department of Biology, College of Arts, Education, and Sciences, University of Louisiana at Monroe; <sup>2</sup>Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA

**Waterbirds, rice and crawfish in Louisiana.** *J. V Huner<sup>1</sup>, R.R. Romaine<sup>2</sup> and M.J. Musumeche.<sup>1</sup>* <sup>1</sup>Louisiana Ecrevisse, Boyce; LA and <sup>2</sup>LSU Ag Center, Baton Rouge, LA.

**Using geolocator technology to connect breeding and wintering populations of prothonotary warblers for advancing conservation.** *Erik I. Johnson<sup>1</sup> and Jared D. Wolfe<sup>2</sup>.* <sup>1</sup>National Audubon Society, 6160 Perkins Rd., suite 135, Baton Rouge, LA; <sup>2</sup>School of Renewable Natural Resources Building, Louisiana State University, Baton Rouge, LA.

**Diet composition of hunter-harvested waterfowl at the white lake wetlands conservation area.** *Eric Ledet and Aaron R. Pierce.* Department of Biological Sciences, Nicholls State University, Thibodaux, LA

**Morphometric sex determination of bald eagles from Louisiana.** *Nickolas R. Smith<sup>1</sup>, Alan D. Afton<sup>2</sup>, and Thomas J. Hess, Jr.<sup>3</sup>.* <sup>1</sup>School of Renewable Natural Resources, Louisiana State University, Baton Rouge; <sup>2</sup>U. S. Geological Survey, Louisiana Cooperative Fish and Wildlife Research Unit, Louisiana State University; <sup>3</sup>Louisiana Department of Wildlife and Fisheries, Rockefeller Refuge, Grand Chenier, LA (deceased).

**Floating aquatic vegetation monitoring and management in the Barataria Preserve.** *Christa Russell<sup>1</sup> and Julie Whitbeck<sup>2</sup>.* <sup>1</sup>Environmental Steward, Jean Lafitte NHP, New Orleans, LA; <sup>2</sup>Ecologist, Resource Management, Jean Lafitte NHP, New Orleans, LA

**Nesting activity of whooping cranes reintroduced to Louisiana.** *Phillip L. Vasseur<sup>1</sup>, Charles C. Smith<sup>1</sup>, Sammy L. King<sup>2</sup>, Sara E. Zimorski<sup>3</sup>, and Chad Gaspard<sup>3</sup>.* <sup>1</sup>School of Renewable Natural Resources, Louisiana State University AgCenter; <sup>2</sup>U.S. Geological Survey, Louisiana Cooperative Fish and Wildlife Research Unit, Louisiana State University AgCenter; <sup>3</sup>Louisiana Department of Wildlife and Fisheries, Gueydan, LA.

**USDA Wildlife Services feral swine disease surveillance activities in Louisiana, 2009-present.** *Scott Woodruff.* USDA Wildlife Services, National Wildlife Disease Program, Port Allen, LA.

9:30-11:40 **FOCUS SESSION ON LOUISIANA'S FERAL HOG INVASION**

9:30–9:50 **Wild pig reproduction in Louisiana – just the facts.** *Kim Marie Tolson<sup>1</sup> and James M. LaCour<sup>2</sup>.* <sup>1</sup>Department of Biology, University of Louisiana at Monroe, Monroe, LA; <sup>2</sup>Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

9:50–10:10 **Movement of wild pigs in Louisiana and Mississippi.** *Stephen B. Hartley<sup>1</sup>, Buddy L. Goatcher<sup>2</sup> and Sijan K. Sapkota<sup>1</sup>.* <sup>1</sup>U.S. Geological Survey, National Wetlands Research Center, Lafayette, LA; <sup>2</sup>U.S. Army Corps of Engineers, ERDC, Environmental Lab, Environmental Risk Assessment Branch, Vicksburg, MS.

10:10–10:30 **Response of wetland vegetation to aerial gunning of feral hogs at the Pass A Loutre Wildlife Management Area.** *Todd Baker.* Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

10:30-10:50 **Sodium nitrite as a toxicant for feral swine.** *Glen T. Gentry<sup>1</sup>, Conner Herrington<sup>2</sup> and Dearl Sanders<sup>1</sup>.* <sup>1</sup>Bob R. Jones – Idlewild Research Station, LSU Agricultural Center, Clinton, LA; <sup>2</sup>Department of Biology, College of Arts, Education and Sciences, University of Louisiana at Monroe.

10:50-11:40 **Panel discussion of “Coordinating a response to Louisiana’s feral hog invasion”.** *John Pitre (chair), Chad Corville, Scott Woodruff, Kim Marie Tolson, Stephen Hartley, Todd Baker, and Glen Gentry.*

11:40–12:00 **PRESENTATION OF POSTER AWARD AND CLOSING COMMENTS**

**Abstracts**  
**Louisiana Association of Professional Biologists**  
**2014 Fall Symposium**

---

**AERIAL ASSESSMENT OF DAMAGE INFLICTED BY WILD PIGS IN  
MARSHES OF TERREBONNE PARISH, LOUISIANA**

ANTHONY BALLARD<sup>1</sup>, KIM MARIE TOLSON<sup>1</sup>, JAMES M. LACOUR<sup>2</sup>, and EDMOND MOUTON<sup>2</sup>.

<sup>1</sup>Department of Biology, College of Arts, Education, & Sciences, University of Louisiana at Monroe

<sup>2</sup>Louisiana Department of Wildlife and Fisheries.

The mosaic of different habitats present in Louisiana's marshes presents a unique and sensitive ecosystem that is currently suffering adverse effects by the encroachment of wild pigs (*Sus scrofa*). This project aims to document and assess wild pig damage in Louisiana's marsh habitats. The study area is a 498,000 acre block of land in Terrebonne Parish, Louisiana where fresh, intermediate, brackish, and salt marsh types can be found. Pig damage was identified by flying seventeen north-south transects in a helicopter equipped with floats to support marsh landings. Transects were 1.87 miles apart and covered a total observation width of 0.5 mi (0.25 mi on each side). Once damage was detected from the air, and photographing and aerial mapping were completed, ground-truthing was conducted to verify that all damage being recorded was correctly identified. Pig sign was verified by the presence of tracks, scat and rooting. While on the ground, researchers recorded plant species impacted and used a subjective vegetative damage rating to determine the quality (minor, moderate, severe, bare ground) of pig damage found. In February and March of 2013, seventeen damage sites were detected ranging from 3.0 to 72.6 acres in size. In total, 227.5 acres of damage were detected in the 2013 survey over the 141,640 total acres observed along the transect lines. In the April 2014 survey, eight damage sites were detected that ranged from 1.28 to 60.95 acres in size. A total of 160 acres of damage were recorded over the same transect lines flown in 2013. In both survey years, damage sites were confined to freshwater marsh only and almost all followed along waterways. Extrapolation methods for both years followed the CNCP (Coast wide Nutria Control Program) calculations to estimate the total damage within the study area. Assuming equal distribution and occupancy of feral pigs in this area, it is estimated that damage could meet or exceed 853 total acres in 2013 and 600 total acres in 2014 within the freshwater marsh alone. The decline in damage from the first to the second year of the survey could be explained by aerial gunning operations in the area, emigration from this area, or hunter pressure during the winter months. Additionally, the aerial photographs taken will be compared with current satellite photos using a remote sensing program that will then classify other areas of damage not located on transect lines.

---

## **PREDATION AND RECRUITMENT BASED ON ORIENTATION OF OYSTERS (*CRASSOSTREA VIRGINICA*) AND MUSSELS (*ISCHADIUM RECURVUM*) ON FABRICATED SHORELINE OYSTER REEFS**

CALEB P. BOURGEOIS and EARL MELANCON

Department of Biological Sciences, Nicholls State University, Thibodaux, LA.

We tested whether orientation of oysters and mussels influences predation and recruitment on three fabricated shoreline structures in Terrebonne Bay, Louisiana. Each structure, Gabion Mats (inclined orientation), A-Jacks (horizontal) and ReefBlks (vertical) has a unique shape and creates different opportunities for predators. Known quantities of oysters or mussels were placed on a respective structure type (orientation) and at natural intertidal reefs, using wire-mesh trays that were either totally enclosed for predator exclusion, or partially enclosed or completely open, resulting in a 3x4 (Tray x Orientation) block design.

In a series of two-week summer-fall mussel experiments, no significant differences in mortality or recruitment ( $P < .05$ ) were found between the three prey orientations or natural reefs. But preliminary results suggest that regardless of how mussels are oriented, recruitment exceeds mortality (predation) by as much as 40-54% in exposed trays and perhaps as much as 96% in closed trays. In a concurrent summer through fall three-month oyster experiment, deployed trays also exhibited no significant differences in oyster recruitment abundance and survival between the three orientations. But the natural intertidal reefs exhibited four to five times greater oyster recruitment when compared to the three orientations ( $P < .001$ ). Supplemental was the mussel recruitment occurring with the oysters, but opposite that of oysters with natural reefs exhibiting only about half the abundance to the structures ( $P < .01$ ).

The major design axis of each structure does not have a significant influence on the recruitment or survival of oysters and mussels, but mussels prefer the structures to natural reef.

---

## **ENDANGERED RED WOLVES: HISTORIC AND CONTEMPORARY THREATS.**

KRISTIN E. BRZESKI, SABRINA TAYLOR, MICHAEL CHAMBERLAIN, and DAVID RABON JR.

School of Renewable Natural Resources, LSU, Baton Rouge, LA  
Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA  
Red Wolf Recovery Program, U.S.F.W.S., Charlotte, NC

Red wolves (*Canis rufus*) historically occurred throughout the southeastern United States, but habitat loss and intense predator control programs resulted in the species being declared extinct in the wild by 1980. In the 1970s, the few remaining wild red wolves were trapped from southwestern Louisiana and southeastern Texas to initiate a captive breeding program. Currently, through captive breeding and reintroduction efforts, red wolves persist in one, small wild population in North Carolina.

Threats to the current red wolf population are similar to those in the historic 1970s Louisiana population, such as disease, inbreeding, and hybridization with coyotes (*Canis latrans*). We assessed disease threats and inbreeding, which can reduce fitness and immune capabilities, in contemporary NC red wolves to inform current management practices and ultimately help conserve a once endemic Gulf coast species. The most prevalent parasites detected in contemporary red wolves were heartworm (*Dirofilaria immitis*) and hookworm (*Ancylostoma caninum*), parasites also prevalent in the historic Louisiana population. Several tick borne pathogens were detected for the first time, including *Ehrlichia* spp. and the bacteria causing Lyme disease (*Borrelia burgdorferi*). Since red wolves were first reintroduced to NC in 1987, pedigree inbreeding coefficients ( $f$ ) increased considerably and almost every wild born wolf was inbred (average  $f=0.154$  and max  $f=0.383$ ). While red wolf fitness did not appear to be directly affected by inbreeding, inbred wolves were smaller. Continued monitoring of disease and inbreeding is especially important because red wolves persist in a population where every individual is important for population viability, and pathogens that only moderately affect population growth may contribute to extinction.

---

## LEAST TERN (*STERNULA ANTILLARUM*) NESTING SUCCESS ON GRAND ISLE, LOUISIANA

HEATHER FRASER<sup>1,2</sup> NICOLE NORELLI<sup>1,2</sup> ERIK JOHNSON<sup>1</sup>, JED PITRE<sup>2</sup>, and KACY RAY<sup>2</sup>

<sup>1</sup>Audubon Louisiana, National Audubon Society, 6160 Perkins Rd., Baton Rouge, LA

<sup>2</sup>American Bird Conservancy, 4249 Loudoun Ave., The Plains, VA

Grand Isle is Louisiana's only inhabited barrier island and provides important habitat for beach-nesting birds. Between 2012 and 2014, beachfront Least Tern (*Sternula antillarum*) colonies were monitored to assess breeding success between April and August. Additionally, the program minimized human disturbance through a public education campaign that complemented up to 2.5 miles of symbolic fencing surrounding the beachfront colonies. We determined 260 nest fates across three years - 30% hatched resulting in a daily survival rate (DSR) of 0.926 (95% CI 0.914 to 0.935). Only 14 nests (5%) failed as a result of humans, and an additional 26 nests (10%) were abandoned although not necessarily due to human pressure. In contrast, 42 nests (17%) were depredated primarily by coyotes and another 64 nests (25%) were washed out from high tides or heavy rains. These multiple threats unpredictably affected DSR, varying between 0.786 and 0.989 from week to week and 0.895 to 0.952 from year to year. Fledging rates between 2012 and 2014 were similar, averaging 0.19 fledging/pair, which is similar to other estimates from the Gulf Coast, but lower than what has been modeled necessary to sustain stable populations. In response to a decrease in suitable nesting habitat on the beachfront from recolonizing dune vegetation, Least Tern colonies in the interior of the island increased from 71 pairs in 2013 to 156 pairs in 2014; however, these interior locations were vulnerable to flooding and human disturbance pressures which resulted in nearly complete breeding failure.

---

## SODIUM NITRITE AS A TOXICANT FOR FERAL SWINE

GLEN T. GENTRY<sup>1</sup>, CONNER HERRINGTON<sup>2</sup> and DEARL SANDERS<sup>1</sup>

<sup>1</sup>Bob R. Jones – Idlewild Research Station, LSU Agricultural Center, Clinton, LA

<sup>2</sup>Department of Biology, College of Arts, Education and Sciences, University of Louisiana at Monroe

The increasing wild pig population in the United States and specifically the southeast has been directly linked to negative impacts to the environment, agronomic crops and domesticated livestock production. Economic impact estimates as high as \$1.5 billion nationally have been reported for this invasive species leaving stakeholders with few economical options available for control. It has been proposed that current methods which include hunting, snaring and trapping are not adequate to control the current population and alternative methods must be developed. Currently there is no labeled toxicant for feral swine in the United States. It is well known that pigs are more sensitive to the negative effects of sodium nitrite due to low levels of methemoglobin reductase when compared with most other species that have been evaluated, including humans. Therefore, the objective of our research is to determine the effective lethal dosage of sodium nitrite. To this end, feral pigs were captured using commercial type traps throughout the Feliciana's and transported to the Bob R. Jones – Idlewild Research Station and held in a 1 ha holding pen. Pigs were fed ad libitum whole shell corn and soyhull flake pellets and had ad libitum access to water. On treatment days, pigs were transported to the LSU AgCenter's Isolation Facility in Baton Rouge, LA. Upon arrival, a stock solution of sodium nitrite in water was prepared resulting in a solution of a known concentration. Pigs were individually weighed, snared, gavage volume calculated and sodium nitrite administered at one of five concentrations, 120 mg/kg, 135 mg/kg, 150 mg/kg, 165 mg/kg or 210 mg/kg via oral gavage. Pigs were then placed in isolation rooms, two pigs per room and monitored. Any pigs that did not expire were humanely euthanized via captive bolt followed by exsanguination and subsequently incinerated. To date, 33 feral pigs (19 females and 14 males) with an average body weight of 29 kg (range: 10 kg – 84 kg) have been tested resulting in a 45% mortality (8 females and 7 males) with pigs dying an average of 2.5 h after dosing across all nitrite concentrations. At this point, mortality does not appear to be biased by gender or weight with 48% of females (average body weight: 40 kg; range: 11 kg – 64 kg) and 50% of males (average body weight: 22 kg; range: 10 kg – 49 kg) expiring compared with 52% of females (average body weight: 24 kg; range: 10 kg – 64 kg) and 50% of males (average body weight: 33 kg; range: 11 kg – 84 kg) not expiring. Preliminary results show that pig mortality at sodium nitrite concentrations of 120 mg/kg, 135 mg/kg, 150 mg/kg, 165 mg/kg and 210 mg/kg were 25%, 45%, 63%, 0% and 100%, and time to death was 2.1, 2.5, 2.3 and 2.9 h, respectively. This early data must be interpreted cautiously due to the relatively low number of pigs per treatment group. Work is ongoing and numbers of feral pigs included in each treatment group will be increased over time and concentrations of 180 mg/kg and 195 mg/kg will also be included as treatment concentrations.

---

---

## MOVEMENTS OF WILD PIGS IN LOUISIANA AND MISSISSIPPI

STEPHEN B. HARTLEY<sup>1</sup>, BUDDY L. GOATCHER<sup>2</sup> and SIJAN K. SAPKOTA<sup>1</sup>

<sup>1</sup> U.S. Geological Survey, National Wetlands Research Center, 700 Cajundome Blvd., Lafayette, LA

<sup>2</sup> U.S. Army Corps of Engineers, ERDC, Environmental Lab, Environmental Risk Assessment Branch, 3909 Halls Ferry Road, Vicksburg, MS

The prolific breeding capability, behavioral adaptation and adverse environmental impacts of wild pigs (*Sus scrofa*) fuels increasing urgency towards managing their populations and understanding their movements. Currently, little is known about wild pig populations and movements in Louisiana and Mississippi. We investigated spatial and temporal movements of wild pigs in both marsh and non-marsh physiographic regions from 2011 to 2013. Twenty-one global positioning system satellite telemetry tracking collars were installed on adult wild pigs captured with trained dogs and released. Coordinates of their movements were recorded hourly. We collected 16,674 hourly data points including date, time, temperature, and position during a three-year study. Solar and lunar attributes, such as, sun and moon phases and azimuth angles were not related significantly to the movements among wild pigs. Movements were significantly correlated negatively with temperature. Differences in movements between seasons and years were observed. On average movements of boars were significantly greater than those of sows. Average home range using a minimum convex polygon for boars was 911 hectares, whereas for sows 116 hectares. Marshland wild pigs had lesser movements relative to those from more arid non-marsh habitats. Overall, results of this study indicate that natural movements have not been a major factor in the recent broad-scale range expansion observed in this species in the United States.

---

## Diurnal Microhabitat Selection by *Scolopax minor* (American Woodcock) on Sherburne WMA

CONNER HERRINGTON<sup>1</sup>, JEFFREY DUGUAY<sup>2</sup> and KIM MARIE TOLSON<sup>1</sup>.

<sup>1</sup>Department of Biology, College of Arts, Education, and Sciences, University of Louisiana at Monroe

<sup>2</sup>Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

The migratory shorebird *Scolopax minor* (American Woodcock) was among the top ten most harvested migratory birds in the Atlantic and Mississippi Flyways prior to 1990. Declining populations have been attributed to fire suppression, urban development, and forest succession along migratory pathways as well as on wintering and breeding grounds. Additionally, the decline in numbers is a partial result of low survival rates on wintering grounds. Once arriving on their wintering grounds, woodcock select different habitats for diurnal and nocturnal use. Diurnal habitat consists of sparse ground cover located in densely forested areas in order to easily move in search of earthworms in moist soils. Overhead cover to avoid predation is essential for survival while foraging. Nocturnal habitat, utilized for feeding, roosting and courtship, typically consists of open areas such as clear cuts and old fields. A comprehensive management plan for wintering woodcock must provide adequate diurnal and nocturnal habitats within close proximity of one another. The purpose of this study is to determine what microhabitat characteristics comprise the diurnal habitat sites selected by woodcock

on Sherburne WMA near Krotz Springs, Louisiana. Woodcock are located at night using a spotlight and captured with a long handled net. Each bird is sexed, aged, weighed, banded with a USFWS aluminum leg band, then fitted with a Series A 5400 radio transmitter weighing 4.8 g. Upon release, attempts are made 4-5 days each week to locate as many woodcock as possible using a telemetry receiver. Once located, the flush point is marked using a hand held GPS unit. On a subsequent visit, vegetation measurements are taken using a variety of techniques at the flush point as well as at a randomly selected site within 30 m between 0-360o from the flush point. Understory (0.1-6.0 m above the ground) and tree canopy cover (>6.0 m above the ground) are measured using the line intercept method. Horizontal vegetation cover in the stratum 0.0-1.5 m above the ground is determined using a 0.6 x 1.5 m coverboard by counting the number of squares covered over 50% by vegetation. Densiometer readings are recorded at each flush point and basal area is measured using a 10 factor prism. Finally, percent ground cover type is estimated using a one meter square frame. Flush locations identified using telemetry equipment along with the vegetation measurements were recorded from November 2013 until migrations began in February 2014. Data collection will be repeated beginning November of 2014. Data will be analyzed using a variety of analyses with the SAS program. GIS mapping will also be used to measure distances from flush points to nearest openings that could be used for nocturnal habitat.

---

## LEAD SHOT AVAILABILITY IN FIELDS MANAGED FOR MOURNING DOVE HARVEST

JAMES HOLT<sup>1</sup>, KIM MARIE TOLSON<sup>1</sup>, and JEFFREY DUGUAY<sup>2</sup>.

<sup>1</sup>Department of Biology, College of Arts, Education, and Sciences, University of Louisiana at Monroe.

<sup>2</sup>Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

Spent lead shot from firearms is receiving much attention across the country as it is being made available to, and ingested by, various wildlife species. A focus of this attention has been the popular game bird *Zenaidura macroura*, or mourning dove. Over the years, doves have become some of the most sought after game birds in North and South America. This increase in hunting has caused more landowners and land managers to manage fields specifically for dove hunting. With large numbers of hunters concentrated into these specific locations, concerns are growing over the large amounts of spent lead shot being deposited on the fields and adjacent areas. Mourning doves are sight feeders and, due to their physical conformation, only have the ability to forage from the top of the soil. An objective of this study is to quantify the amount of lead available to doves, and how management efforts (soil manipulation) affect its availability on Sandy Hollow WMA in Tangipahoa Parish, Louisiana. Soil samples are collected in three rounds: 1) before any land management practices have occurred, 2) after all land management practices have been completed and before the beginning of hunting season, and 3) at the conclusion of the hunting season. Soil samples are gathered from within four managed fields, as well as the adjacent forested areas. From each field, six 30.5 cm x 30.5 cm samples are collected by scraping the top layer, and another six samples taken 1cm deep. This same sampling procedure is repeated in the forested areas next to each field. A total of 96 samples are taken for each round of soil collections. Each sample is individually washed through a 1 mm mesh sieve to remove the smallest matter with the remaining material hand sorted to identify any shot present. Data will be analyzed to determine if shot availability is influenced by sampling round (time of year), depth, location (field vs. forest), and management effort (soil manipulation). A second

objective of this study is to determine if mourning doves are ingesting spent shot. Gizzards collected from hunter harvested birds are radiographed and then dissected. In 2013, a total of 323 gizzards were examined and 2 (0.62%) were found to contain ingested lead shot.

---

## WATERBIRDS, RICE AND CRAWFISH IN LOUISIANA

HUNER, J. V<sup>1</sup>, R.R. ROMAIRE<sup>2</sup> and M.J. MUSUMECHE, M. J.<sup>1</sup>

<sup>1</sup>Louisiana Ecrevisse, Boyce, LA

<sup>2</sup>LSU Ag Center, Baton Rouge, LA

Crawfish have always been a part of the South's rice landscape. Intentional cultivation of crawfish, *Procambarus* sp., with rice began in Louisiana in the 1950s. Initially, crawfish perpetuated themselves in these artificial wetlands and were harvested when fields were dewatered for rice harvests. Later, fields were intentionally reflooded in the fall following rice harvests and crawfish were harvested during the cool season prior to spring planting of rice. Rice stubble and ratoon re-growth served as the basis for the food web that sustained crawfish growth.

In 2013, 162,088 ha of rice and 73,295 ha of crawfish were cultivated in Louisiana. Much of the crawfish was cultivated in ricefields in rotation with rice.

Mature crawfish are stocked in the spring after the rice crop is permanently flooded. These subsequently burrow into levees where they reproduce. Females emerge from burrows in the fall following rice harvest when the fields are refilled with water. Some farmers will raise rice and crawfish continuously in each year. In that case, restocking of crawfish is often not necessary. Most farmers, however, do not follow crawfish with rice crops. Rather fields are fallowed or planted with a crop like soybeans or sorghum. Rice will be planted the following spring and crawfish restocked. This management practice is favored because crawfish densities tend to be low enough to ensure growth to larger, more valuable size. Cattle may be pastured in fallow fields. Hay may also be grown.

Estimated area devoted to crawfish based on forage management includes: crawfish sole crop, no rice: 11,725 ha; crawfish sole crop, rice as forage not harvested: 10,995 ha; rice-crawfish-rice-crawfish: 10,260 ha; and rice-crawfish-fallow or crop: 40,315 ha. So, 84 % of crawfish are cultivated with rice and 69% of the rice is harvested.

Waterbirds have always been attracted to ricefields because the shallow water,/moist soil habitat provides food including rice seed, weed seeds, roots, and corms, macro-invertebrates including crawfish, and small vertebrates, especially amphibians and fishes. The addition of crawfish to the rice landscape ensured that shallow water/moist soil habitat was available year round. The absolute amount of animal food resources available to waterbirds was dramatically increased because fields that would otherwise not hold water were filled from fall into the following spring. Predaceous wadingbirds – storks, herons, egrets, ibises, spoonbills and cranes – benefitted greatly from this cornucopia of energy rich animal prey.

Where crawfish are cultivated in monoculture, so-called “crawfish rice” is often planted as crawfish forage in late July or August which reduces hypoxia that would otherwise occur when rice straw is flooded in rice fields harvested for grain. This management scenario provides moist soil/shallow water habitat for shorebirds that migrate through the area at that time, referred to by ornithologists as “fall” migration!

Most crawfish production is concentrated in south-central and southwestern Louisiana. The southwestern Louisiana working rice-crawfish wetland region has been declared a continentally Important Bird Area by the National Audubon Society because it supports over 70 species of resident, seasonal, and migratory waterbirds, many of which are listed as “species of conservation concern”. These include waterfowl, cranes, wadingbirds, rails, coots, shorebirds, gulls and terns. In addition, numerous terrestrially-oriented bird species utilize this landscape. Over 65% of the state’s 479 recorded bird species have been documented in the region. Widespread use of the crawfish component of the habitat by introduced Whooping Cranes is of specific interest. Sandhill Cranes are associated with dry fallowed fields and may roost in flooded fields while wintering in the region.

The dramatic loss of adjacent coastal wetlands over the past half century emphasizes the critical importance of the region’s working wetland landscape for waterbird conservation. For this reason, the general trend of reduction in rice cultivation in the region over the past decade is especially disturbing.

---

## USING GEOLOCATOR TECHNOLOGY TO CONNECT BREEDING AND WINTERING POPULATIONS OF PROTHONOTARY WARBLERS FOR ADVANCING CONSERVATION

ERIK I. JOHNSON<sup>1</sup> and JARED D. WOLFE<sup>2</sup>.

<sup>1</sup>National Audubon Society, 6160 Perkins Rd., suite 135, Baton Rouge, LA

<sup>2</sup>School of Renewable Natural Resources Building, Louisiana State University, Baton Rouge, LA

The Prothonotary Warbler (Parulidae: *Prothonotaria citrea*) is a charismatic species of what was once an extensive swamp and bottomland hardwood forest system found across the southeastern U.S., but these forests have been reduced to less than 20% of their historical acreage. Since the 1960s, however, the extent of bottomland forest clearing cannot solely account for Prothonotary Warbler population declines of 1.1%/year range-wide and 1.8%/year in Louisiana. Factors unrelated to breeding success, such as habitat loss on migratory and wintering grounds, may play an important role in explaining these persistent declines. Preferred winter habitats, such as mangrove forests, are facing an increasing threat of deforestation as mechanized technologies become more available in developing Latin American countries between southern Mexico and northern South America. With an estimated 25% of the Prothonotary Warbler’s current global breeding population found in Louisiana, it is important to understand how breeding and wintering populations are connected to develop international conservation strategies and partnerships. In 2013, we attached a light-logging geolocator to a Prothonotary Warbler, which revealed its 7,758-km migratory route, the first time this year-round mapping has ever been achieved for this species. This work has helped catalyze the formation of the Prothonotary Warbler Working Group, a team of researchers and conservation leaders around the

Western Hemisphere, which is developing a coordinated and systematic approach to conserve this species by connecting breeding and non-breeding life history stressors.

---

## POPULATION DYNAMICS OF PASSERINE BIRDS IN SOUTHERN LOUISIANA.

BINAB KARMACHARYA<sup>1</sup>, ERIK I. JOHNSON<sup>2</sup>, JARED D. WOLFE<sup>3</sup>, and SCOTT M. DUKE-SYLVESTER<sup>1</sup>.

<sup>1</sup>University of Louisiana at Lafayette

<sup>2</sup>Audubon Louisiana

<sup>3</sup>Louisiana State University

We conducted a capture-mark-recapture study from March 2010 to March 2014 at Bluebonnet Swamp Nature Center, Baton Rouge, a patch of forest surrounded by urban matrix, to help assess the status of bird populations in Southern Louisiana. From this study we have estimated values for survival rate, recruitment and population growth rate for Northern Cardinal (*Cardinalis cardinalis*) and Carolina Wren (*Thryothorus ludovicianus*). We also examined the annual, seasonal, sex-specific and age-specific variation in demographic parameters. The pattern of covariation between the population growth rate and two of its component (survival and recruitment) were investigated to understand the primary drivers of population dynamics. We found statistically significant variation in the survival rate due to environmental and demographic factors. Adults of both species had higher survival than immature and females had better survival than males in Northern Cardinal. There was seasonal variation in survival of Northern Cardinal but not Carolina Wren. Annual realized population growth rate of both species was >1 during the study period indicating stable population.

---

## DIET COMPOSITION, BREEDING SITE-FIDELITY, AND APPARENT SURVIVAL OF ROYAL TERNS AND SANDWICH TERNS ON THE ISLES DERNIERES BARRIER ISLANDS REFUGE

JEFF LIECHTY and AARON PIERCE

Department of Biological Sciences, Nicholls State University, Thibodaux, LA

Royal Terns (*Thalasseus maxima*) and Sandwich Terns (*T. sandvicensis*) are two of the most abundant seabirds breeding on Isles Dernieres Barrier Islands Refuge (IDBIR) in South Louisiana. I studied the breeding biology of these species to determine breeding site fidelity, annual adult survival rate, and diet composition. Between 2009 and 2014 we banded 1800 Royal and Sandwich Terns on IDBIR. Breeding site fidelity was determined via re-sighting of color-banded adults returning to breed on IDBIR in 2013 and 2014. Rates of return will be used to model adult annual survivorship and better understand population dynamics. Tern diet composition was determined by analyzing prey items regurgitated during banding efforts in 2013 and 2014. A total of 920 prey items were collected comprising 31 species and 21 different families of fish and invertebrates. Analysis of variation in diet composition between tern species and between adults and pre-fledgling chicks will enable identification of important food resources, and provide information on resource partitioning between

species, and potential interaction with fisheries. Results indicate that Atlantic croaker (*Micropogonias undulatus*) and bay anchovy (*Anchoa mitchelli*) are important food resources for the terns. This study will provide information on IDBIR's importance to breeding seabirds and can be used to inform future conservation, restoration, and management decisions.

---

## **DIET COMPOSITION OF HUNTER-HARVESTED WATERFOWL AT THE WHITE LAKE WETLANDS CONSERVATION AREA**

*ERIC LEDET and AARON R. PIERCE*

Department of Biological Sciences, Nicholls State University, Thibodaux, LA

Coastal Louisiana is an important wintering ground for North American waterfowl and has over 16,187 km<sup>2</sup> of coastal wetlands and represents 40% of the United State's coastal wetlands and 96% of the coastal wetlands in the Mississippi Flyway. Most waterfowl breed in the northern United States and Canada then migrate to the southern United States and Mexico during the winter. Waterfowl use wetlands during the winter period which provide abundant food and shelter. Coastal Louisiana traditionally supports 19% of the waterfowl wintering in the United States and 66% of the Mississippi Flyway's population. However waterfowl wintering habitat in coastal Louisiana is being lost and degraded as a result of several factors including: erosion, increases in invasive species which reduce water quality and decrease native plant diversity, and saltwater intrusion which is increasing salinity in traditionally freshwater marshes. Quality wintering habitat has been linked to higher survival rates, higher body conditions, and higher reproduction in ducks. Management for quality wintering habitat is critical for the conservation of waterfowl and coastal wetlands in Louisiana. Diet studies are used to better understand the needs of ducks during the wintering period but none have occurred in the southwest region of the state in recent years. The objective of this study is to determine important food resources of wintering waterfowl at the White Lake Wetlands Conservation Area (WLWCA). Our focal species included: Mallards (*Anas platyrhyncho*), Northern Pintail (*Anas acuta*), Gadwall (*Anas strepera*), Blue-winged Teal (*Anas discors*), Green-winged Teal (*Anas crecca*), and Ring-necked Ducks (*Aythya collaris*). We collected the upper digestive tracts of 938 ducks harvested at the WLWCA during the 2013-14 wintering season. Upper digestive tracts were separated into three parts for each sample (esophagus, proventriculus, and gizzard) and contents were washed, dried, sorted by taxonomic groups and then weighed. Preliminary results will be presented and compared on a temporal scale and between species sex and age.

---

## **FORESTED FRESHWATER WETLAND RESPONSES TO SECONDARILY TREATED MUNICIPAL EFFLUENT DISCHARGE**

*ASHLEE K. MINOR and AARON R. PIERCE*

Department of Biological Sciences, Nicholls State University, Thibodaux, LA.

Louisiana's coastal wetlands are a highly productive and dynamic ecosystem that provides valuable services to the Louisiana Gulf Coast. However, extensive hydrologic modifications have resulted in exponential wetland loss throughout the gulf coast. As a method of treatment for municipal effluent

and possibly wetland restoration, assimilation projects have been developed throughout southeastern Louisiana. The goal of this study is to determine how the application of secondarily treated municipal effluent influences wetland functions. This study will determine changes in wetland dynamics directly related to municipal effluent and provide an evaluation of the wetland health at the Thibodaux Assimilation Project. Automated water level recorders and biannual water quality samples were used to determine differences in surface flooding and water quality between the Thibodaux Assimilation Project and its' associated control site. Tree growth and leaf litter were measured annually from 2010 to 2014 to monitor primary productivity in the wetlands. From March to July of 2013 and 2014, we also used bimonthly sampling of the macrofaunal community using light traps and funnel traps to examine differences between the assimilation and control sites. I present preliminary results obtained from this study. Results of this study will provide information on the long-term effects of municipal effluent discharge and direct future wetland restoration and assimilation projects.

---

## **EFFECTS OF VEGETATION TYPE ON SEDIMENT MICROBIAL COMMUNITY STRUCTURE AND ACTIVITY IN COASTAL SALT MARSHES OF SOUTHEASTERN LOUISIANA.**

*A.J. RIETL<sup>1</sup>, M.E. OVERLANDER<sup>2</sup>, J.A. NYMAN<sup>1</sup>, and C.R. JACKSON<sup>2</sup>*

<sup>1</sup>Louisiana State University, School of Renewable Natural Resources

<sup>2</sup>Department of Biology, University of Mississippi

Plants in coastal salt marshes exhibit clear patterns of zonation driven by edaphic conditions, competition, and elevation, but little is known as to whether sediment microbial communities share similar patterns of distribution to aboveground plants in salt marshes. In some brackish and saline marshes of southeastern Louisiana, isolated patches of *Juncus romerianus* grow within large monospecific stands of *Spartina alterniflora* without any obvious change in elevation, providing conditions to examine the impacts of vegetation on microbial community structure and activity and to determine the extent to which microbial assemblages can be related to the zonation of the plant community. Sediments were sampled at three salt marsh sites in southeastern Louisiana and the activity of six microbial extracellular enzymes was determined along with denaturing gradient gel electrophoresis of 16S rRNA gene fragments to examine community structure of bacteria, archaea, and fungi. Bacterial communities under *S. alterniflora* and *J. romerianus* were significantly different at two of the three sites sampled. Archaeal communities differed by vegetation type and site while fungal communities differed by site, but not by vegetation type. No differences were found for extracellular enzyme activities based on vegetation type. These results suggest that the *J. romerianus* patches in *S. alterniflora* marshes may lead to shifts in the composition of sediment bacterial and archaeal communities, but may not result in changes in overall microbial community functioning. The differences found among our sites suggest that while salt marsh vegetation can influence microbial community composition, larger scale geographic differences may be more important.

---

## FLOATING AQUATIC VEGETATION MONITORING AND MANAGEMENT IN THE BARATARIA PRESERVE

CHRISTA RUSSELL<sup>1</sup>, and JULIE WHITBECK<sup>2</sup>

<sup>1</sup>Environmental Steward, Jean Lafitte NHP, New Orleans, LA 70130

<sup>2</sup>Ecologist, Resource Management, Jean Lafitte NHP, New Orleans, LA 70130

Over the last several decades, a suite of invasive species have joined the floating aquatic plant community living on the waterway surfaces in the Barataria Preserve of the Jean Lafitte Natural Historical Park and Preserve. This group constitutes one of the most problematic invasive species incursions in the region; along with impeding boat and fishing access via the formation of exceptionally dense mats, the invasive plant species also alter the quality of food available to native wetland inhabitants, compete with native plant species, and have the potential for cascading impacts on the physicochemical characteristics, community structure and biological diversity of the Preserve's waterways.

Giant Salvinia (*Salvinia molesta*) is a relatively new invader to the preserve, characterized by an exceptional growth rate and a propensity to form extremely dense mats. As a means of control, the Natural Resource Management team of the Barataria Preserve began regular introductions of the Salvinia weevil (*Cyrtobagous salviniae*) into the Preserve's affected waterways in 2011. The purpose of this project is to not only monitor the size, growth, and effectiveness of this biocontrol population, but also to examine the potential changes in native and exotic community structure associated with invasive presence in the Preserve's waterways. Our team samples on a monthly basis, extracting weevils via Burslese funnels for analysis. We also assess the sampled waterways for presence/absence and rarity/scarcity of a variety of native and exotic species. Our results suggest that the biocontrol population can be highly successful in regulating the growth of Giant Salvinia, but that the effects of this control are highly variable by site and time of year. The addition of community structure monitoring is relatively new to the program, but promises to provide insight into the natural temporal dynamics and the impacts of exotic species in the Preserve's waterways. We also address our early experience in developing this monitoring program into a 'citizen science' project and in exploring effective ways to communicate with the public about this specific issue and invasive species management in general.

---

## MORPHOMETRIC SEX DETERMINATION OF BALD EAGLES FROM LOUISIANA

NICKOLAS R. SMITH<sup>1</sup>, ALAN D. AFTON<sup>2</sup>, and THOMAS J. HESS, JR.<sup>3</sup>

<sup>1</sup>School of Renewable Natural Resources, Louisiana State University, Baton Rouge, LA

<sup>2</sup>U. S. Geological Survey, Louisiana Cooperative Fish and Wildlife Research Unit, Louisiana State University, Baton Rouge, LA.

<sup>3</sup>Louisiana Department of Wildlife and Fisheries, Rockefeller Refuge, Grand Chenier, LA; deceased.

Bald Eagles are monomorphic in plumage but sexually dimorphic in size, with females typically larger than males. Thus, sex plays an important role when considering variations in movements,

home ranges, and habitat use. Bortolotti (1984, *Journal of Wildlife Management* 48:72-81) developed a morphometric formula for assigning sex of post-fledging Bald Eagles; however, his formula was developed on northern birds which are relatively larger than southern Bald Eagles. Accordingly, we evaluated the accuracy of Bortolotti's formula on 28 post-fledging Bald Eagles from Louisiana, and upon documenting numerous misclassifications (21.4%), we used discriminant analysis to develop a new formula applicable to Louisiana and other southern Bald Eagles. Using beak depth and hallux length, we were able to provide 100% correct classification as confirmed by DNA analysis. Our formula should be applicable for accurately determining the sex of post-fledging southern Bald Eagles.

---

## **A DECADAL SCALE NUTRIENT LOADING STUDY IN A COASTAL WETLAND: IMPACTS ON SOIL MICROBIAL PROCESSES**

*H. STEINMULLER, M. MCKEE, S. GRAHAM, J.R. WHITE, and I.A. MENDELSSOHN.*

Department of Oceanography and Coastal Sciences, LSU.

Anthropogenic activities drive global eutrophication, which not only impacts upland systems, but wetland environments that receive their runoff. Increased fertilizer use by the agricultural industry coupled with increased production and disposal of wastewaters has led to a marked increase in bioavailable nutrients in aquatic and wetland ecosystems. These increasing shifts in the availability of macronutrients can potentially impact biogeochemical cycling and soil microbial processes. Recently, many short-term fertilization studies have determined the immediate effects of pulsed inorganic nutrient loading in coastal wetlands, often with conflicting results. This project sought to investigate the effects of longer-term (10 years) nutrient loading in a coastal wetland. Treatments included paired nitrogen (as ammonium) levels of 0, 50, 200, and 1200 kg ha<sup>-1</sup> yr<sup>-1</sup> with phosphorus levels of 0, 131 kg ha<sup>-1</sup> yr<sup>-1</sup>. We measured soil characteristics, soil microbial biomass as well as several measures of microbial activity, including potentially mineralizable nitrogen and denitrification rates. Our results showed that after 10 years of nutrient loading, there was an increase in total P with P loading. However, there were no significant effects of the microbial activity. This result suggests that after bioavailable nutrients are incorporated into the organic soil matrix and nutrient loading ceases, there is little lasting effects on the microbial activity of these oligohaline coastal marsh soils.

---

## **ASSESSMENT OF THE HABITAT VALUE AND EDGE EFFECT OF DIFFERENT WETLAND RESTORATION TECHNIQUES FOR WATERBIRDS IN THE MISSISSIPPI RIVER BIRD'S FOOT DELTA**

*LAUREN R. SULLIVAN*

School of Renewable Natural Resources, LSU, Baton Rouge, LA.

Our study investigates freshwater wetland restoration projects, varying in construction technique, located in the Mississippi River Bird's Foot Delta, to determine if the techniques result in differences in the value of habitat created for waterbirds. The three techniques to be compared are: (i) sediment

diversions, (ii) beneficial use of dredged material, and (iii) marsh terraces. We focus on edge habitat; i.e., the boundary between emergent vegetation and open water, found in past studies to be the most valuable habitat for waterbirds. Three 1200 m<sup>2</sup> plots, divided into 4 zones of 0-10 m, 10-20 m, 20-30 m, and 30-40 m from the edge, have been selected to represent each treatment type, pre-restoration edge habitat, and the open-water control condition (15 plots in total). Waterbird, emergent and submerged aquatic vegetation, and environmental data from study sites, collected seasonally from April 2013 to September 2014, will be analyzed to test our hypothesis that the value of edge habitat at 0 m is the same among the techniques, but those techniques that maximize edge habitat through structural complexity will support a larger, more diverse population of waterbirds overall. The findings from this study will assist those implementing restoration initiatives with selecting projects that benefit native and migratory waterbirds.

---

## WILD PIG REPRODUCTION IN LOUISIANA – JUST THE FACTS.

KIM MARIE TOLSON<sup>1</sup> and JAMES M. LACOUR<sup>2</sup>,

<sup>1</sup>Department of Biology, University of Louisiana at Monroe, Monroe, LA,

<sup>2</sup>Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

Wild pigs (*Sus scrofa*) are the most abundant free-ranging, invasive exotic mammal in the United States (Decker 1978). There are multiple biological factors that have contributed to the range expansion and establishment of successful breeding populations of wild pigs: 1) they tolerate a wide range of habitat types and climates and are thus classified as habitat generalists; 2) with few native predators, the natural mortality of wild pigs is low; 3) as an opportunistic omnivore, their diet consists of all forms of plant and animal matter; and 4) with a high reproductive potential, wild pigs are the most prolific large mammal in North America (Hellgren 1999). Having a gestation period of 114 days (3 months + 3 weeks + 3 days), sows can potentially produce two litters a year under optimum conditions. Combining the relatively short gestation with early reproductive maturity and the capability to produce large litter sizes has resulted in the high reproductive potential. In order to characterize the breeding biology of wild pigs from Louisiana, the reproductive tracts (ovaries and uteri) were analyzed from 87 wild sows collected in 16 parishes. Uteri were dissected and fetuses present were counted, the crown-rump length was measured to determine gestational age and breeding date. Ovaries were sectioned to determine the presence of follicles or corpora lutea. Reproductive efficiency was calculated on those samples with fetuses present. Developing follicles were found in the ovaries of sows with weights as low as 47 pounds. Either follicles or corpora lutea were present in the ovaries of 96.25% (77/80) of adult sows analyzed. Fetuses present ranged from 1 to 10 in number and were of varying gestational age. Based on the gestational age of the fetuses, approximately one third of the sows were projected to have farrowed in the months of December or January. The breeding biology of wild pigs in Louisiana was found to parallel that of other wild pig populations across the south.

---

## NESTING ACTIVITY OF WHOOPING CRANES REINTRODUCED TO LOUISIANA

PHILLIP L. VASSEUR<sup>1</sup>, CHARLES C. SMITH<sup>1</sup>, SAMMY L. KING<sup>2</sup>, SARA E. ZIMORSKI<sup>3</sup>, and CHAD GASPARD<sup>3</sup>

<sup>1</sup>School of Renewable Natural Resources, Louisiana State University AgCenter, Baton Rouge, LA

<sup>2</sup>U.S. Geological Survey, Louisiana Cooperative Fish and Wildlife Research Unit, Louisiana State University AgCenter, Baton Rouge, LA

<sup>3</sup>Louisiana Department of Wildlife and Fisheries, White Lake Wetlands Conservation Area, Gueydan, LA

In 2010, the Louisiana Department of Wildlife and Fisheries, along with the LSU AgCenter and other partners, began a whooping crane reintroduction program in southwestern Louisiana with the goal of establishing a self-sustaining population outside of the species' current range but within its historic range. A self-sustaining population would consist of approximately 120 individuals and 25-30 reproductive pairs that persist at those levels for 10 years without further reintroductions. Whooping cranes begin breeding at 3-4 years of age, so we made a concerted effort in 2014 to monitor known and potential pairs for reproductive behavior. One pair nested on a private farm and successfully incubated two eggs to full term (~30 days). Unfortunately, the eggs did not hatch and were later determined to have been infertile. A subsequent nest attempt resulted in the same fate; nevertheless, these were the first nests with eggs produced by whooping cranes reintroduced to Louisiana and the first eggs laid in the Louisiana wild in 75 years. Although no chicks hatched, we were encouraged that the pair incubated both nests to full term without complications from predators or biting insects, which have been major obstacles for other reintroduction programs. Furthermore, human-related disturbances from crawfish harvest operations did not cause nest abandonment. We obtained valuable data on the timing of nesting, nest site selection, and incubation behavior. As more nests are produced in the coming years, we will continue to monitor them and update our database on reproductive behavior in order to make more informed decisions regarding the management of this reintroduced population.

---

## **TOXICOLOGY RESEARCH ON A MANUFACTURED MICROBIAL BIO-SURFACTANT FOR USE IN OIL SPILL DISPERSANTS**

*BRAN WAGNER, HEIDI OLIVER, and CHRISTOPHER C. GREEN*

School of Renewable Natural Resources, Louisiana State University Agricultural Center

In 2010 Deepwater Horizon's wellhead broke open 1524 meters below the water's surface releasing some 4.9 million barrels of crude oil into the Gulf of Mexico. Clean up and remediation efforts, to disperse the crude oil, resulted in the release of approximately 6.9 million liters of Corexit 9500A directly into the wellhead and on the water surface. Previous studies have indicated that dioctyl sodium sulfosuccinate (DSS) a major component of Corexit products increase in toxicity in high salinity environments. We sought to determine acute toxicity of non-fractionated samples of the microbially produced bio-surfactant FA-Glu through 96-hour bioassays to determine the dose response curves when applied to 8-10 day old Gulf Killifish (*Fundulus grandis*) in three salinity treatments of 4, 12, 24‰.

FA-Glu is a microbial bio-surfactant fermented at Iowa State University and Modular Genetics, Inc. as a potential alternative to DSS that could be used in dispersing future crude oil spills. We started with a mid-salinity treatment of 12‰, which produced 96-hour LC50 value of 110.1 mg/L (96.2 - 122.9 mg/L). There was a slight increase when the salinity of the bioassay was decreased to 4 ‰ that lead to a LC50 value of 126.0 mg/L (106 - 138 mg/L). Finally, at an environmental salinity of 24‰, there was a decrease of the 96-hour LC50 value to 68.2 (64.0 - 72.5 mg/L).

These findings indicate that in saline water that is 24‰ saline FA-Glu is more toxic than in 12 ‰ or 4 ‰. Thus FA-Glu's contribution to toxicity as an oil dispersant applied to open waters would decline as currents carried the surfactant into less saline waters. This study will be used as a benchmark to further comparative dose-response curves for FA-Glu isomers to determine if isomers alter surfactant toxicity across the same range of salinities.

---

## **USDA WILDLIFE SERVICES FERAL SWINE DISEASE SURVEILLANCE ACTIVITIES IN LOUISIANA, 2009-PRESENT**

*SCOTT WOODRUFF*

USDA Wildlife Services, National Wildlife Disease Program, Port Allen, LA.

The Comprehensive Feral Swine Disease Surveillance effort within Wildlife Services began in FY 2009. The primary disease that guides the disease surveillance is classical swine fever (CSF), a foreign animal disease (FAD), with additional serum collected for pseudorabies (PRV), swine brucellosis (SB), and the NWDP Serum Archive. Since the beginning of the program, additional diseases have been tested for special projects, including toxoplasmosis, trichinella, swine influenza, leptospirosis and hepatitis E. In Louisiana, blood samples have been collected from over 700 feral swine. This poster summarizes the results from this surveillance effort.

---